

2.0 RESEARCH DESIGN

In the language of the federal compliance legislation that was the motivating force behind the project, the Blackbird Creek site (7NC-J-195D) was determined eligible for inclusion in the NRHP under Criterion D, for its potential to contribute information important to the understanding of Delaware prehistory. The research design guiding investigations at the site was initially formulated to contribute to research priorities established in existing regional management plans for portions of the Woodland I period in the Delmarva chronology, a span roughly equivalent to the Early Woodland in traditional regional chronologies (Custer 1986, 1994; Custer and DeSantis 1986). The following sections discuss the theoretical approach to the investigation, initially presented on the basis of the conventional research contexts as established by DE SHPO, followed by a consideration of more recently identified research themes.

A note regarding chronological terminology, an alternative chronology has long been proposed for the Delmarva Peninsula (Custer 1984, 1989), and much of the existing database for the region, as well as various settlement pattern models derived from that data, result from work conducted by Custer and his associates (e.g., Custer 1984; Custer and Bachman 1984; Custer and DeSantis 1985; Custer and Cunningham 1986). Many regional interpretations as well as most conventional research contexts typically reference to this chronology. Thus, while the traditional eastern North American model is the main organizational framework used the present study, the regional Delmarva chronology is referenced below for comparative purposes.

2.1 Introduction/General Research Context

2.1.1 Review of the Existing Woodland I Period Context

Current interpretation of the Delmarva Woodland I period (3000 BC-AD1000, embracing the traditional Later Archaic, Early Woodland, and Middle Woodland periods) suggests that this era encompassed a pronounced cultural change from the mobile hunter-gatherer groups of the earlier portions of the Archaic period, to more settled adaptations toward estuarine and riverine settings that provided stable and concentrated subsistence resources. Regional environments during the Woodland I were initially characterized by the prevalence of an oak-hickory forest. The rate of sea level rise that had drastically altered coastlines slowed, allowing riverine and estuarine environments to stabilize sufficiently to support significant populations of shellfish and anadromous fish in larger streams (Oldale 1986). Current understanding of settlement during this period of transition describes a shift to these riverine and estuarine locales to take advantage of their increasingly predictable fish and shellfish resources (Custer 1978; Gardner 1978). A settlement hierarchy was proposed in which large sites, referred to as macro-band camps, occurred in areas adjacent to freshwater/saltwater boundaries and along the floodplains of major drainages (Custer 1986, 1994).

Some evidence for changes in regional settlement patterns has been reported during the final stages of the Woodland I, with macro-band base camps increasing in size and developing into semi-sedentary base occupations (Custer 1989, 1994:297). Studies have indicated a shift in the locations of these base camps from small, creek floodplains to large, river floodplains. This proposed shift may have set the stage for the local development, or acceptance, of

horticulture (Snyder and Gardner 1979; Gardner 1982:78). On the Delmarva Coastal Plain, Custer (1986, 1994:95) noted a shift in base camp locations from confluence areas of freshwater streams and estuaries to locations farther upstream. With increased sedentism, more extensive trade and exchange systems are assumed to have developed along with a generally unspecified increase in social complexity. Both processes have been inferred from the appearance of exotic lithic raw materials, as well as artifacts and mortuary ceremonialism associated with cultures from the Mississippi and Ohio River Valleys (Custer 1989).

Delaware management plans describe the main research priorities for the Woodland I in terms of defining variability in adaptations, as evidenced by changes in settlement and subsistence patterns both temporally and geographically. To organize the information, six main property types, or site types, have been proposed for the period: macro-band base camps; micro-band base camps; transient camps; procurement/processing locations; quarries; and quarry reduction sites (Custer 1986:184). The standard research topics for organizing Woodland I period studies include paleoenvironmental studies, chronology, household settlement patterns, community settlement patterns, regional settlement patterns, lithic technology, ceramic technology, subsistence systems. Additional research topics, considered “more theoretical,” include trade and exchange, mortuary ceremonialism, prehistoric migrations, and trends in socio-cultural evolution; these topics have been cited as secondary, relying on data from the primary the research (Custer 1994:177).

Again from the perspective of federal compliance, the eligibility of the site for inclusion in the NRHP was based specifically on the potential of the site to contribute information on ceramic technology, intra-site patterning (archaeological site structure), and chronology. These topics were presented in Management Summaries, Scopes of Work, and Research Designs developed by the Principal Investigator and other project researchers, and thus they form the basis for the research presented in this report (Auman 1999a, 1999b; Auman and Bupp 1999; Parsons 2000).

2.1.2 Recent Research Concerns

In the years since these management plans were developed, research attention has widened to embrace additional theoretical concepts related to a deeper understanding of the lives and experiences of the people who inhabited pre-Colonial Delmarva prior to the arrival of European settlers in the 16th and 17th centuries. Interpretive focus has shifted from material culture in and of itself to the relationship between material culture and society. Questions are asked about how materials both formed and inform the societies of which they were a part; how societies were organized and were integrated with physical and cultural landscapes; and how people operated as individuals or agents, both creating and altering the social structures by which they lived. In the analysis and interpretation of the Blackbird Creek site, these newer perspectives are interwoven with the traditional research topics that initially guided the investigations. For example, the usefulness of the existing system of property types in Delaware noted above is evaluated in light of perspectives on social organization such as heterarchy and cultural landscapes; the place of the Blackbird Creek occupation within the various settlement schemes is assessed; and the type of research questions appropriate to the site and how the site addresses those questions is examined.

2.2 Chronology

The Blackbird Creek site provided an opportunity to refine our understanding of a portion of the chronological period referred to as the Early Woodland period. The two main goals in establishing chronology were to determine the span of site occupations and to place the occupations in regional context as a basis for further insights into the lives of the people who lived at the site. Chronological span of the Blackbird Creek occupations was based on temporally diagnostic artifacts recovered from the site, including ceramics that occurred in intact features, and on radiocarbon dating of charcoal samples from feature matrices. While age ranges for the two ceramic types from the site, Marcey Creek and Dames Quarter, have been reported elsewhere (Custer 1994; Dent 1995; Wise 1975; Griffith 2012), data from the Blackbird Creek site provided an opportunity to obtain a more precise temporal context for these wares in Delaware. Marcey Creek and Dames Quarter ceramics were recovered from small prehistoric pit features that also contained charcoal and other types of artifacts. While few Marcey Creek sherds were recovered, their association with Dames Quarter ceramics is of potential importance in assessing the possible contemporaneity of ceramic wares or the transition between ceramic technologies.

2.3 Materiality and Technology

2.3.1 The Relationship between Material Culture and Society

Materiality is the study of material culture and its interrelationship with social practices. As an investigative approach, materiality involves assessing material culture from both descriptive and functional perspectives, characterizing the material properties of artifacts but also addressing the ways in which making and using artifacts may affect or intervene in the social lives of individuals and societies (Jones 2004). Some archaeologists have adopted a theoretical approach referred to as agency that emphasizes the power of individuals to act knowledgeably and independently in their interactions with one another and with respect to the material world (Barrett 2001; Gardner 2008; Hodder and Hutson 2003). Built in part on Bourdieu's (1977) concept of social *habitus*, which is described as learned cultural structures (the constraints of social norms or traditions), this theoretical perspective views the individual as an agent of action operating within a structure of traditions but with the power to work against convention and customary practice, recasting custom in the process. The reflexivity implied in this view is part of the dialectical nature of materiality and is integral to a theory of agency, in that material culture is seen as both the product of and directly influencing technology and the individuals practicing that technology.

Contrary to some interpretations, the key concept of agency is not individuals but relationships, the interactions between individuals and the material world (Robb 2010; Shanks 2008). People develop experience through their engagement with their material environment. This engagement begins within the context of deeply embedded cultural and psychological structures, "the implicit, unquestioned and unquestionable values which Bourdieu calls 'doxa'". Yet the structures are ambiguous, seen more as "the raw material for creativity, conflict and heterodoxy as well as orthodoxy" (Robb 2001). Individuals may thus understand the rules of their society but choose to manipulate them rather than follow them directly; and in so doing they change the rules.

2.3.2 Technology

Technology is defined variously, and somewhat vaguely, as applied science, the study of practical or industrial arts, or the knowledge and use of tools. In general, technology consists of our manipulation of the material world, whether directly through the production and use of tools or more indirectly by means of various processes or techniques. Because materials and the technology to manipulate them are so pervasive in our everyday lives, we often take them for granted and do not think about the implications of how we accomplish things. Yet even seemingly mundane tasks can have meaning beyond the directly functional or utilitarian, particularly in traditional societies. Meaning can be explicit, as in the overt symbolism of renewal associated with the planting of crops at the start of the growing season or replastering the walls of a mud house (Boivin 2008). In addition, implicit meanings may reside in certain activities, wider social meanings wherein the creative and innovative dimensions of day-to-day acts are played out in the context of materiality and agency.

2.3.3 Ceramic Technology

The manufacture and use of ceramics are prime examples of activities in which more than one level of meaning may be inherent. Various analytical processes have been used in interpreting ceramic data from archaeological contexts. The manufacture of ceramic vessels is an additive technology that is rigidly sequenced, with certain steps that must be carried out in a specific order: the artisan must collect and prepare clay and temper; build up the vessel and apply surface treatment or decoration; and fire and cool the vessel. Considering the structured aspect of the process, models of sequence are useful interpretive devices. A particular form of sequential modeling, the so-called *chaîne opératoire*, provides an approach that both describes the structure of the process while also accounting for diversity and situational variability within that structure. Often closely associated with stone tool manufacturing processes and typically more fully articulated in analyses of lithic reduction, the model is applicable to any sequentially ordered activity¹. It has been described as “a syntax of decision making” Gargett (n.d.) that focuses on the relationship between design, raw material, and end product. The model examines the problem-solving aspects of artifact production, use, and repair (Dobres 2000:168), interpreting entire artifact assemblages and artifact life-histories, going beyond simple morphological descriptions of types and finished artifacts (Bleed 2001; Peuramaki-Brown 2004; Scarcella 2009). The analysis recognizes that cultural traditions shape the sequential operations of ceramic technology, effectively directing the actions of the individual artisans; however, the artisan consciously chooses particular strategies from within the tradition, thereby reinforcing it, or diverges from the tradition and in so doing restructures the process.

Ceramic typologies are still relatively generalized in the Delmarva region, defined for very wide regions and time spans, commonly on the basis of paste and tempering agent alone (Stewart 1998:20ff, 240ff), in contrast to more specific attributes of style or vessel form as in the Northeast or the American Southwest. The analysis of a sample of ceramic wares with

¹ Gargett (n.d.) notes that hyenas follow an operational sequence in the way in which they consume an animal carcass. The process is highly structured, specific, and unvarying; and it is virtually identical across hyena species, throughout their range, and through time. The difference between this and a technological sequence is that among animals the pattern of behavior is largely if not completely governed by instinct, while among humans it is generally learned, and thus it may be changed.

uniform attributes may prove valuable in refining type definitions during the Early Woodland period. The ceramics from the Blackbird Creek site have been identified as Marcey Creek (1200-900 BC: Manson 1948; Artusy 1976) and Dames Quarter (1200-700 BC: Custer et al. 1986; Custer 1989). Marcey Creek ceramics are the earliest ceramics identified in the Middle Atlantic region. Dames Quarter ware is one of three broad ceramic types that are considered “experimental wares” in the Delmarva (Custer 1989). These wares have traditionally included Dames Quarter Blackstone Temper (hornblende/gneiss) (Artusy 1976); Selden Island (Wilkins 1978); Ware Plain (McCann 1950; Wise 1975).

An in-depth examination of ware attributes is used to clarify the type designation of the artifacts recovered from the Blackbird Creek site. Mineralogical analysis of clay and temper provides information about the technology of ceramic manufacture and contributes to a growing database of paste and temper attributes which, when tied to specific geographic regions, should eventually serve as a basis for population mobility studies. Experimental studies were conducted as part of this project to determine whether ceramic vessels were produced from local or nonlocal clays. As part of the investigation, clay collected from the banks of Blackbird Creek was compared to thin sections of ceramic sherds from the site.

2.4 Social Organization and Intra-site Patterning

The residents of the Blackbird Creek site lived within natural and socio-cultural environments that comprised a multidimensional landscape. Their lives were influenced by the characteristics of the physical setting which they occupied and by ongoing alterations to that environment. Their lives were further shaped by cultural systems—their own and, occasionally, those from outside or external sources. Pronounced changes were occurring in American Indian life ways on the Delmarva Peninsula, as across the entire Middle Atlantic, during the time the site was occupied. Beginning in the Late Archaic period, regional archaeological evidence suggests that life was generally becoming more settled, characterized in part by less portable storage technologies including ceramic containers, and by larger population aggregates (Dent 1995). Conventional analyses of settlement patterns in the Middle Atlantic region have focused on the distribution of ceramic wares associated with named cultural complexes (Kingsley 2002), several of which have been defined for the Early Woodland period of northern Delmarva, including Barker’s Landing, Clyde Farm, Wolfe Neck, and Black Rock (Custer 1989, 1996). The current investigation examines the relevance of these structures to the Blackbird Creek site data and to archaeological interpretation in general. While useful in a very general organizational sense, these complexes tend to focus interpretation on artifacts without considering them as integral parts of the lives of people. Beyond considering these traditional settlement structures, the investigation of social organization at the site is also approached by examining various alternative perspectives on social complexity, social ordering, and integration with the landscape.

2.4.1 Complexity and Heterarchy

Human societies are by their nature complex. Societies have unpredictable features related to their past histories that can significantly influence their character and development. More importantly, human societies are composed of individuals among whom interactions are often non-linear and thus seemingly random, erratic, and resistant to modeling. Societies are

also dynamic. In contrast to physical systems that are composed of similar or identical units, societies are formed of individuals who vary greatly in their capabilities, desires, and needs. Thus they defy description on a systematical scale.

Often wrongly equated with social hierarchy, complexity as it pertains to socio-cultural interpretation addresses the ways in which societies integrate various parts into a cohesive whole. As archaeological theory has extended beyond issues of culture history, systematics, and process over the last few decades, researchers have questioned existing notions of unilinear cultural evolution, or the idea that there is a necessary evolutionary scale of developing complexity in socio-cultural systems (Prentiss 2008). In this view, asking questions about the apparent complexity of a culture as a means of ranking its development are seen as not relevant or pertinent to descriptions of past societies. The concept of heterarchy may be a more relevant approach to this type of description.

In Crumley's now oft-cited definition, heterarchy is a state in which organized entities are independent and situationally ordered, in contrast to the permanently ranked ordering that is characteristic of a hierarchy (Crumley 1995). Both the context and duration of relationships between elements is different between heterarchies and hierarchies, with heterarchically organized entities being autonomous and arranged on the basis of present conditions, in either a short or long-term relationship, but an essentially impermanent one that may change as the situation alters (Rautman 1998). The source of modern heterarchical theory in human cognitive studies is helpful in explaining the concept (Crumley 2005). The notion emerged with the investigation of independent cognitive structures in the brain by neurophysiologist and cyberneticist Warren S. McCulloch (1945). The brain adjusts to the re-ranking of values to contend with changing circumstances. The impermanence of the ranking describes a non-hierarchical ordering that McCulloch referred to as heterarchical, emphasizing fluidity and adaptability. Situational organization has also been described by Gearing (1958), who referred to the concept of structural poses, characterized as roles and organizational groupings that come and go depending on the tasks at hand, with the social structure of a society being the sum of the structural poses assumed by its constituents throughout the year.

In terms of Middle-Atlantic/Delmarva prehistoric settlement patterning as reflected in the occupations at the Blackbird Creek site, this theoretical perspective would imply replacing strict adherence to a hierarchical base-camp/support-camp or micro-band/macro-band model with a heterarchically oriented model that embraces independent and interdependent settlements. The overall structural form of such a system would be related to the specific conditions present during the occupations, be they environmental, seasonal, social, political, ceremonial, or some combination of factors.

2.4.2 Landscape

Archaeological landscape studies today have moved beyond basic examinations of how the physical aspects of the landscape (topography, resources, soil types, etc.) aided or constrained people in the past (Knapp and Ashmore 1999). Landscapes are now recognized as dynamic, culturally constructed worlds that do not necessarily correspond directly to natural environments (Anschuetz et al. 2001). Landscapes have socio-symbolic as well as physical dimensions and are "an entity that exists by virtue of its being perceived,

experienced, and contextualized by people” (Knapp and Ashmore 1999:1). People map their social relations onto their landscapes, and these maps may be more cognitive than physical.

Researchers and theorists have come to view landscape in a much wider sense as “the world...understood, experienced, and engaged with through human consciousness and active involvement” (Young 2006). The division between nature and culture is seen as artificial; living within a landscape, people become an integral part of it (Forman and Godron 1986). Landscape is considered in cultural as well as natural terms as a functioning, reciprocal whole—people respond to or adapt to the landscape as a physical environment, but in responding they change their surroundings. As behind much of recent archaeological theory, the idea is to bring people into the picture, to fill the landscape with people by describing not just the relationship between human populations and the environment, but also the relationship between cultural landscapes and social practices (Gojda 2004). This perspective on landscape and the environment developed in part as a means of avoiding the generalizing determinism that has been associated with typing societies within a model of cultural evolution (Shanks 2008). It is wrapped up in the notion of structuration, which holds that people function in a world that is not of their own making (Bourdieu’s *habitus*), but through thoughts and actions create and change that world (Giddens 1981, 1984).

Anschuetz (et al. 2001) note three general aspects of landscape archaeology that can be used to direct interpretation in a modern archaeological context: settlement ecology; ritual landscapes; and ethnic landscapes. *Settlement ecology* is closest to the standard ecological approach in archaeology, in that it tracks the ways in which people interact with the natural environment, respond to its characteristics, and adapt to changes if and when necessary. The researchers also note a more cognitive or ideational aspect in which culture and tradition operate as what they refer to as “additional filters in how groups structure and organize their use and occupation of places.” They suggest that small-scale changes in cultural patterns may be the result of slow adaptation to environmental variation, while more rapid or systemic change may signal social-cultural transformation, “significant realignments to resolve contradictory operational and cognitive models for community interactions with their environment” (Anschuetz et al. 2001:177). *Ritual landscapes* are defined as “the products of stereotyped actions, including specific acts and sequences of acts, that represent the socially prescribed orders by which communities define, legitimize, and sustain their occupation of their traditional homelands” (Anschuetz et al. 2001:178). Archaeological documentation of ritual landscapes, according to the researchers, relies on identifying ritual features or on insights gained through the study of traditional knowledge (specifically, oral history). *Ethnic landscapes* essentially create or reinforce sociocultural identity. These constructs consist of “material culture and symbols [that] signify ethnic or cultural boundaries based on customs and shared modes of thought and expression that might have no other sanction than tradition” (Anschuetz et al. 2001:179). No concrete means of identifying an ethnic landscape are proposed, the researchers observing only that “evidence of differential ethnic representations in...morphological, stylistic, and spatial” data may be noted (Anschuetz et al. 2001:180).

2.4.3 Intra-Site Settlement Patterns

On a more immediate spatial level, the clustering of artifacts and the frequency of well-defined features within an archaeological site can represent significant information about

how people lived at the site: how many separate occupation components might be present, how space was organized during any one occupation and, by implication, how individuals inhabited and used those spaces. An important first step in examining site structure includes determining the size of the site and the presence and arrangement of activity areas (Kent 1991). At the Blackbird Creek site, the study entails a detailed analysis of depositional relationships across horizontal surfaces, investigating evidence for both specific, localized activity areas and site-wide distributions. The analyses focus on delineating evidence of debris clusters that may signal workshop areas; clear areas that may represent parts of the site maintained for domestic use; specialized activity areas recognizable on the basis of tool distributions; and the occurrence of pit features or thermally altered stone concentrations.